Diesel Service Technicians and Mechanics

(0*NET 49-3031.00)

Significant Points

- A career as a diesel service technician or mechanic offers relatively high wages and the challenge of skilled repair work.
- Opportunities are expected to be good for persons who complete formal training programs.
- National certification is the recognized standard of achievement for diesel service technicians and mechanics.

Nature of the Work

The diesel engine is the workhorse powering the Nation's trucks and buses, because it delivers more power and is more durable than its gasoline-burning counterpart. Diesel-powered engines also are becoming more prevalent in light vehicles, including pickups and other work trucks.

Diesel service technicians and mechanics, also known as *bus and truck mechanics and diesel engine specialists*, repair and maintain the diesel engines that power transportation equipment such as heavy trucks, buses, and locomotives. Some diesel technicians and mechanics also work on heavy vehicles and mobile equipment, including bulldozers, cranes, road graders, farm tractors, and combines. A small number of technicians repair diesel-powered passenger automobiles, light trucks, or boats. (For information on technicians and mechanics working primarily on automobiles, heavy vehicles, mobile equipment, or boats, see the *Handbook* statements on automotive, heavy vehicle, and mobile equipment; and small engine service mechanics.

Technicians who work for organizations that maintain their own vehicles spend most of their time doing preventive maintenance, to ensure that equipment will operate safely. These workers also eliminate unnecessary wear on, and damage to, parts that could result in costly breakdowns. During a routine maintenance check on a vehicle, technicians follow a checklist that includes inspecting brake systems, steering mechanisms, wheel bearings, and other important parts. Following inspection, technicians repair or adjust parts that do not work properly or remove and replace parts that cannot be fixed.

Increasingly, technicians must be flexible, in order to adapt to customers' needs and new technologies. It is common for technicians to handle all kinds of repairs, from working on a vehicle's electrical system one day to doing major engine repairs the next. Diesel maintenance is becoming increasingly complex, as more electronic components are used to control the operation of an engine. For example, microprocessors now regulate and manage fuel timing, increasing the engine's efficiency. In modern shops, diesel service technicians use hand-held computers to diagnose problems and adjust engine functions. Technicians must continually learn about new techniques and advanced materials.

Diesel service technicians use a variety of tools in their work, including power tools, such as pneumatic wrenches, to remove bolts quickly; machine tools, such as lathes and grinding machines, to rebuild brakes; welding and flame-cutting equipment, to remove and repair exhaust systems; and jacks and hoists, to lift and move large parts. Common handtools—screwdrivers, pliers, and wrenches—are used to work on small parts and get at hard-to-reach places. Diesel service technicians and mechanics also use a variety of computerized testing equipment to pinpoint and analyze malfunctions in electrical systems and engines.

In large shops, technicians generally receive their assignments from shop supervisors or service managers. Most supervisors and managers are experienced technicians who also assist in diagnosing problems and maintaining quality standards. Technicians may work as a team or be assisted by an apprentice or helper when doing heavy work, such as removing engines and transmissions.

Working Conditions

Diesel technicians usually work indoors, although they occasionally make repairs to vehicles on the road. Diesel technicians may lift heavy parts and tools, handle greasy and dirty parts, and stand or lie in awkward positions to repair vehicles and equipment. Minor cuts, burns, and bruises are common, although serious accidents can usually be avoided if the shop is kept clean and orderly and if safety procedures are followed. Technicians normally work in well-lighted, heated, and ventilated areas; however, some shops are drafty and noisy. Many employers provide lockers and shower facilities.

Employment

Diesel service technicians and mechanics held about 267,000 jobs in 2002. About 20 percent serviced buses, trucks, and other diesel-powered equipment for customers of automotive repair and maintenance shops, motor vehicle and parts wholesalers, or automotive equipment rental and leasing agencies. About 19 percent maintained the buses, trucks, and other equipment of buslines, public transit companies, school systems, or State and local governments, and another 17 percent worked for freight trucking companies. The remaining technicians maintained vehicles and other equipment for manufacturing, construction, or other companies. A relatively small number were self-employed. Nearly every section of the country employs diesel service technicians and mechanics, although most work in towns and cities where trucking companies, buslines, and other fleet owners have large operations.

Training, Other Qualifications, and Advancement

Although many persons qualify for diesel service technician and mechanic jobs through years of on-the-job training, authorities recommend the completion of a formal diesel engine training program. Employers prefer to hire graduates of formal training programs be-

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cause those workers often have a head start in training and are able to advance quickly to the journey level.

Many community colleges and trade and vocational schools offer programs in diesel repair. These programs, lasting 6 months to 2 years, lead to a certificate of completion or an associate degree. Programs vary in the degree of hands-on training they provide on equipment. Some offer about 30 hours per week on equipment, whereas others offer more lab or classroom instruction. Training provides a foundation in the latest diesel technology and instruction in the service and repair of the vehicles and equipment that technicians will encounter on the job. Training programs also improve the skills needed to interpret technical manuals and to communicate with coworkers and customers. In addition to the hands-on aspects of the training, many institutions teach communication skills, customer service, basic understanding of physics, and logical thought. Increasingly, employers work closely with representatives of training programs, providing instructors with the latest equipment, techniques, and tools and offering jobs to graduates.

Whereas most employers prefer to hire persons who have completed formal training programs, some technicians and mechanics continue to learn their skills on the job. Unskilled beginners generally are assigned tasks such as cleaning parts, fueling and lubricating vehicles, and driving vehicles into and out of the shop. Beginners usually are promoted to trainee positions as they gain experience and as vacancies become available. In some shops, beginners with experience in automobile service start as trainee technicians.

Most trainees perform routine service tasks and make minor repairs after a few months' experience. These workers advance to increasingly difficult jobs as they prove their ability and competence. After technicians master the repair and service of diesel engines, they learn to work on related components, such as brakes, transmissions, and electrical systems. Generally, technicians with at least 3 to 4 years of on-the-job experience will qualify as journey-level diesel technicians. The completion of a formal training program speeds advancement to the journey level.

For unskilled entry-level jobs, employers usually look for applicants who have mechanical aptitude and strong problem-solving skills and who are at least 18 years of age and in good physical condition. Nearly all employers require the completion of high school. Courses in automotive repair, electronics, English, mathematics, and physics provide a strong educational background for a career as a diesel service technician or mechanic. Technicians need a State commercial driver's license to test-drive trucks or buses on public roads. Many companies also require applicants to pass a drug test. Practical experience in automobile repair at a gasoline service station, in the Armed Forces, or as a hobby is valuable as well.

Employers often send experienced technicians and mechanics to special training classes conducted by manufacturers and vendors, in which workers learn the latest technology and repair techniques. Technicians constantly receive updated technical manuals and instructions outlining changes in techniques and standards for repair. It is essential for technicians to read, interpret, and comprehend service manuals in order to keep abreast of engineering changes.

Voluntary certification by the National Institute for Automotive Service Excellence (ASE) is recognized as the standard of achievement for diesel service technicians and mechanics. Technicians may be certified as master truck technicians or in specific areas of truck repair, such as gasoline engines, drivetrains, brakes, suspension and steering, electrical and electronic systems, or preventive maintenance and inspection.

For certification in each area, a technician must pass one or more of the ASE-administered exams and present proof of 2 years of relevant hands-on work experience. Two years of relevant formal training from a high school, vocational or trade school, or community or junior college program may be substituted for up to 1 year of the work experience requirement. To remain certified, technicians must be retested every 5 years. Retesting ensures that service technicians and mechanics keep up with changing technology. Diesel service technicians and mechanics also may opt for ASE certification as master school bus technicians or master truck equipment technicians.

The most important work possessions of technicians and mechanics are their handtools. Technicians and mechanics usually provide their own tools, and many experienced workers have thousands of dollars invested in them. Employers typically furnish expensive power tools, computerized engine analyzers, and other diagnostic equipment, but individual workers ordinarily accumulate handtools with experience.

Experienced technicians and mechanics with leadership ability may advance to shop supervisor or service manager. Technicians and mechanics with sales ability sometimes become sales representatives. Some open their own repair shops.

Job Outlook

Employment of diesel service technicians and mechanics is expected to increase about as fast as the average for all occupations through the year 2012. Besides openings resulting from employment growth, opportunities will be created by the need to replace workers who retire or transfer to other occupations.

Employment of diesel service technicians and mechanics is expected to grow as freight transportation by truck increases. Additional trucks will be needed to keep pace with the increasing volume of freight shipped nationwide. Trucks also serve as intermediaries for other forms of transportation, such as rail and air. Due to the greater durability and economy of the diesel engine relative to the gasoline engine, buses and trucks of all sizes are expected to be increasingly powered by diesels. In addition, diesel service technicians will be needed to maintain and repair the growing number of schoolbuses in operation.

Careers as diesel service technicians attract many because they offer relatively high wages and the challenge of skilled repair work. Opportunities should be good for persons who complete formal training in diesel mechanics at community and junior colleges or vocational and technical schools. Applicants without formal training may face stiffer competition for entry-level jobs.

Most persons entering this occupation can expect relatively steady work, because changes in economic conditions have less of an effect on the diesel repair business than on other sectors of the economy. During a downturn in the economy, however, some employers may lay off workers or be reluctant to hire new workers.

Earnings

Median hourly earnings of bus and truck mechanics and diesel engine specialists, including incentive pay, were $16.53 in 2002. The middle 50 percent earned between $13.13 and $20.54 an hour. The lowest 10 percent earned less than $10.66, and the highest 10 percent earned more than $24.61 an hour. Median hourly earnings in the industries employing the largest numbers of bus and truck mechanics and diesel engine specialists in 2002 were as follows:

Local government	$19.58
Motor vehicle and motor vehicle parts and supplies merchant wholesalers	16.80
General freight and trucking	15.62
Automotive repair and maintenance	15.36
Elementary and secondary schools	15.10

Because many experienced technicians employed by truck fleet dealers and independent repair shops receive a commission related to the labor cost charged to the customer, weekly earnings depend on the amount of work completed. Beginners usually earn from 50 to 75 percent of the rate of skilled workers and receive increases as they become more skilled, until they reach the rates of skilled service technicians.

The majority of service technicians work a standard 40-hour week, although some work longer hours, particularly if they are self-employed. A growing number of shops have expanded their hours, either to perform repairs and routine service in a more timely fashion or as a convenience to customers. Those technicians employed by truck and bus firms providing service around the clock may work evenings, nights, and weekends, usually at a higher rate of pay than those working traditional hours.

Many diesel service technicians and mechanics are members of labor unions, including the International Association of Machinists and Aerospace Workers; the Amalgamated Transit Union; the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America; the Transport Workers Union of America; the Sheet Metal Workers' International Association; and the International Brotherhood of Teamsters.

Related Occupations

Diesel service technicians and mechanics repair trucks, buses, and other diesel-powered equipment. Related technician and mechanic occupations include aircraft and avionics equipment mechanics and service technicians, automotive service technicians and mechanics, heavy vehicle and mobile equipment service technicians and mechanics, and small engine mechanics.

Sources of Additional Information

More details about work opportunities for diesel service technicians and mechanics may be obtained from local employers such as trucking companies, truck dealers, or buslines; locals of the unions previously mentioned; and local offices of your State employment service. Local State employment service offices also may have information about training programs. State boards of postsecondary career schools have information on licensed schools with training programs for diesel service technicians and mechanics.

For general information about a career as a diesel service technician or mechanic, write:

➤ Detroit Diesel, Personnel Director, MS B39, 13400 West Outer Dr., Detroit, MI 48239.

Information on how to become a certified diesel technician of medium to heavy-duty vehicles or a certified bus technician is available from:

➤ National Institute for Automotive Service Excellence (ASE), 101 Blue Seal Dr. SE, Suite 101, Leesburg, VA 20175. Internet: **http://www.asecert.org**

For a directory of accredited private trade and technical schools with training programs for diesel service technicians and mechanics, contact:

➤ Accrediting Commission of Career Schools and Colleges of Technology, 2101 Wilson Blvd., Suite 302, Arlington, VA 22201. Internet: **http://www.accsct.org**

➤ National Automotive Technicians Education Foundation, 101 Blue Seal Dr., SE., Suite 101, Leesburg, VA 20175. Internet: **http://www.natef.org**

For a list of public training programs for diesel service technicians and mechanics, contact:

➤ SkillsUSA-VICA, P.O. Box 3000, Leesburg, VA 20177-0300. Internet: **http://www.skillsusa.org**